

REMARKS

The Official Action mailed November 16, 2005, has been received and its contents carefully noted. This response is filed within three months of the mailing date of the Official Action and therefore is believed to be timely without extension of time. Accordingly, the Applicants respectfully submit that this response is being timely filed.

The Applicants note with appreciation the consideration of the Information Disclosure Statements filed on April 5, 2002; and October 30, 2002; and November 11, 2004.

Claims 1-80 are pending in the present application, of which claims 1, 10, 46-49, 66, 67 and 78 are independent. Claims 11, 42, 43 and 67 have been amended to correct minor informalities, and new dependent claims 81-85 have been added to recite additional protection to which the Applicants are entitled. Claims 1-9, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74 and 76 have been withdrawn from consideration by the Examiner (page 2, Paper No. 0505). Accordingly, claims 10, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75 and 77-85 are currently elected, of which claims 10, 47, 49, 67 and 78 are independent. For the reasons set forth in detail below, all claims are believed to be in condition for allowance. Favorable reconsideration is requested.

The Official Action continues to request the Applicants' cooperation in correcting any errors of which the Applicants may become aware in the specification. In response to previous requests, the specification was amended to correct minor informalities in the *Amendments* filed February 18, 2005, and August 22, 2005. The Applicants will correct any further errors in the specification of which the Applicants become aware.

The Official Action rejects claims 10, 13, 15, 17, 25, 27, 29, 33, 35, 37, 39, 41, 47, 49, 51, 53, 55, 57, 63, 65, 67, 69, 71, 73 and 77-80 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Yamazaki et al., claims 20-24, 27-31, 33 and 35, of U.S. Patent No. 6,808,968.

In response, a *Terminal Disclaimer* will be filed as soon as it is complete and received from Japan. Upon filing of this *Terminal Disclaimer*, the claims of the present application are believed to be in condition for allowance. Reconsideration and withdrawal of the obviousness-type double patenting rejections are requested.

The Official Action rejects claims 11 and 43 under 35 U.S.C. 112, second paragraph, asserting a lack of antecedent basis for "one element or a plurality of elements selected from the group consisting of O, O₂, P, H, H₂." The Applicants respectfully disagree and traverse the above-referenced assertion in the Official Action. Initially, it is noted that claims 11 and 43 has been amended for clarity. Specifically, claim 11 has been amended to recite "further comprising a step of adding one element or a plurality of elements selected from the group of O, O₂, P, H, and H₂ in addition to the noble gas element." That is, claim 11 has been amended to positively recite "a step." Claim 43 has been amended to recite "wherein the second semiconductor film further comprises one element or a plurality of elements selected from the group consisting of O, O₂, P, H, and H₂." That is, claim 43 already positively a further step of including one or more of the listed elements in the second semiconductor film. The Applicants respectfully submit that claims 11 and 43 are definite. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 112 are in order and respectfully requested.

The Official Action rejects claims 10, 11, 13, 15, 17, 19, 21, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 53, 55, 57, 59, 61, 63, 65, 67, 71, 73, 75 and 77-80 as obvious based on the combination of U.S. Patent No. 5,789,284 to Yamazaki et al. and U.S. Patent 6,821,827 to Nakamura et al. The Applicants respectfully traverse the rejection because the Official Action has not made a *prima facie* case of obviousness.

As stated in MPEP §§ 2142-2143.01, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference

teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

There is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify Yamazaki '284 and Nakamura or to combine reference teachings to achieve the claimed invention. MPEP § 2142 states that the examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. It is respectfully submitted that the Official Action has failed to carry this burden. While the Official Action relies on various teachings of the cited prior art to disclose aspects of the claimed invention and asserts that these aspects could be used together, it is submitted that the Official Action does not adequately set forth why one of skill in the art would combine the references to achieve the features of the present invention.

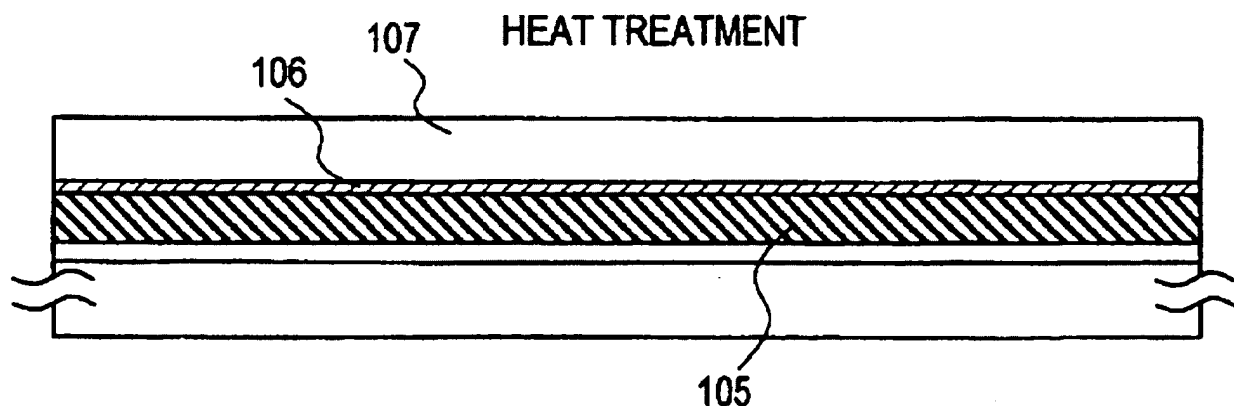
The test for obviousness is not whether the references "could have been" combined or modified as asserted in the Official Action, but rather whether the references should have been. As noted in MPEP § 2143.01, "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) (emphasis in original). Thus, it

is respectfully submitted that the standard set forth in the Official Action is improper to support a finding of *prima facie* obviousness.

The Official Action concedes that Yamazaki '284 does not teach adding a noble gas element to an upper layer of a semiconductor film, the type of the noble gas, or a concentration of the noble gas (page 9, Paper No. 1105). The Official Action relies on Nakamura to allegedly teach implantation of inert atoms in addition to phosphorous into a crystallized semiconductor film for the purpose of creating gettering sites for the removal of impurities within a crystallized semiconductor film (page 10, *Id.*). The Official Action asserts that "[it] would have been obvious to one of ordinary skill in the art to incorporate ... the teachings of Nakamura, with the motivation of creating gettering sites for the removal of impurities" (*Id.*). The Applicants respectfully disagree and traverse the above assertions in the Official Action.

Yamazaki '284 appears to disclose gettering a metallic element within a crystalline silicon film 105 into an amorphous silicon film 107 and then the amorphous silicon film 107 is removed. The amorphous silicon film 107 is used as a gettering layer, and the crystalline silicon film 105, which functions as an active layer afterward, is not used as the gettering layer in Yamazaki '284. Thus, in Yamazaki '284, the gettering layer and the active layer are distinguishable.

FIG.1C



On the other hand, Nakamura appears to disclose that regions 10106 and 10109 in an amorphous silicon film 10102 are used as gettering sites. Nakamura does not disclose an amorphous silicon layer used as a gettering layer over a silicon film. Thus, in Nakamura, the gettering sites are formed in an active layer.

FIG. 1A

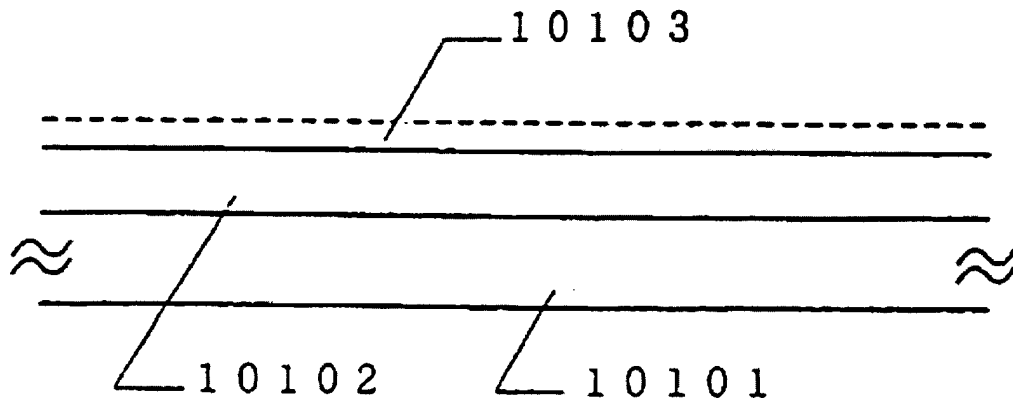
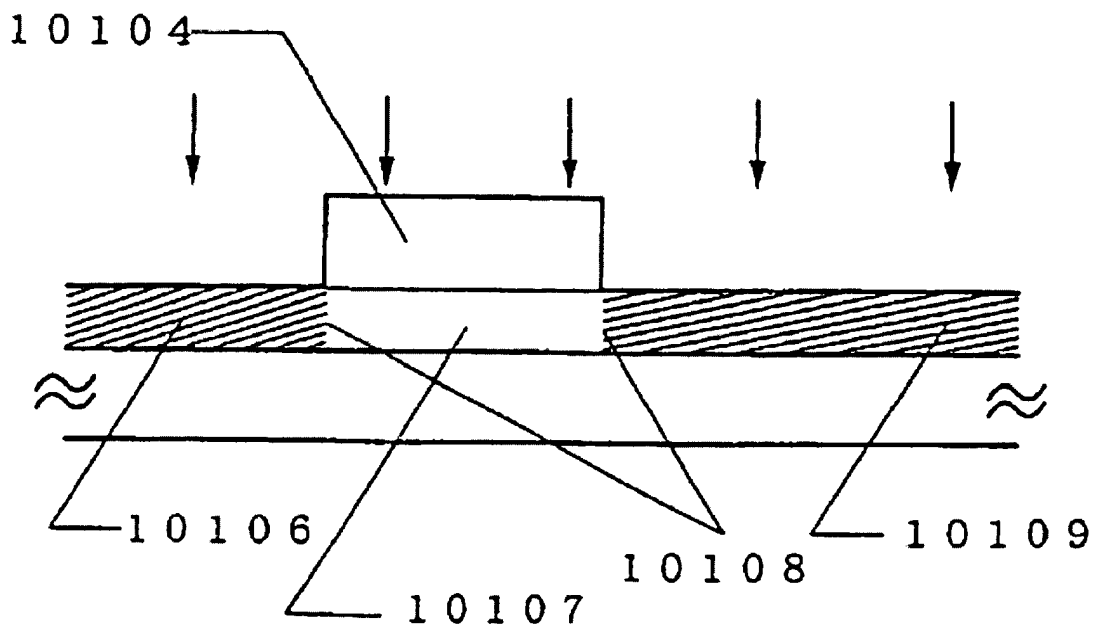


FIG. 1B



The gettering layer of Yamazaki '284 is thus distinguished from the gettering sites of Nakamura. As such, it is not clear how or why one of ordinary skill in the art would have applied the teachings of Nakamura, directed to gettering sites formed in an active layer, to Yamazaki '284, where the crystalline silicon film is not used as a gettering layer. That is, it is not clear why one would have been motivated to not use amorphous silicon film 107 of Yamazaki '284 as a gettering layer and to instead use the crystalline silicon film 105 as a gettering layer.

Therefore, the Applicant respectfully submits that the Official Action has not provided a proper or sufficient suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify Yamazaki '284 and Nakamura or to combine reference teachings to achieve the claimed invention.

In the present application, it is respectfully submitted that the prior art of record, either alone or in combination, does not expressly or impliedly suggest the claimed invention and the Official Action has not presented a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.

For the reasons stated above, the Official Action has not formed a proper *prima facie* case of obviousness. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

New dependent claims 81-85 have been added to recite additional protection to which the Applicants are entitled. Claims 81-85 have been added to recite that the metallic element moves to (the region of) the (second) semiconductor film in a direction perpendicular to the first semiconductor film (or the substrate). For the reasons stated above, the Applicants respectfully submit that new claims 81-85 are in condition for allowance.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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